

AMERICAN BEE JOURNAL

45th Year

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No. 52



Apiary of R. F. Wutzke, Chicago, Ill.



Home of R. F. Wutzke, Chicago, Ill.



Apiary of J. M. Buchanan, of Franklin, Tenn. — (See page 898.)



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IMPORTANT NOTICES

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- 1st.—To promote the interests of its members.
- 2d.—To protect and defend its members in their lawful rights.
- 3d.—To enforce laws against the adulteration of honey.

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(INCORPORATED)

OBJECTS:

1. To create a larger demand for honey through advertising.
2. To publish facts about honey, and counteract misrepresentations of the same.

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1. Any bee-keeper may become a member by paying to the Manager an annual fee of \$1.00 for each 20 (or fraction of 20) colonies of bees (spring count) he owns or operates.
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Do not fail to write for SAMPLES of our Foundation, Descriptive Catalog, PRICES and DISCOUNTS, stating Quantity of Foundation wanted. Wax to be Worked, and List of other Supplies, and Prices will be accordingly. Beeswax always wanted.

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JOHN DOLL & SON, Power Bldg., Minneapolis, Minn.

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—AND—

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	1-lb.	5-lbs.	10-lbs.	25-lbs. 50 lbs.
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November	8 "
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March	2 "

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FINE EXTRACTED HONEY in cans or barrels. The best the world can produce. Samples 8 cents, to pay postage and packing. How much can you use? Prices quoted quick on the quantity you mention.

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Southwestern Bee Co., 438 W. Houston St., San Antonio, Tex.

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—FOR HIS—

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December 1..	8 "
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February 1....	6 "
March 1.....	4 "
April 1.....	2 "

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This department occupies the 3 floors of the main building of the factory. It is equipped from top to bottom with the best machinery that brains can invent and money buy. Every detail in hive-making has been carefully figured out. Immense sheds covering acres of ground protect the lumber piles so that shrinkage is reduced to almost nothing. This accounts for the accurate fitting and clearness of stock of Root's wooden wares. The entire factory, light, and machinery power, is furnished by a great, 400 horse-power engine, and a 100 horse-power dynamo.

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We are leaders in buying wax and selling the famous Weed Process Foundation. Our Wax Department is furnished with tanks for refining, machines for sheeting, all sizes of mills, automatic papering machines, etc. Over 150,000 pounds of foundation is made, boxed and shipped all over the world every year.

TIN SHOP

Here are made the thousands of smokers that bear the Root trade-mark of excellence. Here are made the cans for extractors and uncapping-cans. Machines for cutting honey-boards; presses for stamping tin and iron into various forms.

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Equipped with the most expensive machinery and manned by skillful employees. We make our own metal parts and much machinery for other factories. Powerful iron presses, iron cutting and drilling machines are in evidence everywhere.

APIARIES

We have scattered in and around Medina 5 apiaries devoted exclusively to bee and queen rearing, supplemented by 5 more in New York, Pennsylvania and Cuba, and we control the product of several other large queen-breeding establishments. Our queens are bred with scientific care. We test every device we make before it is introduced to the public.

SHIPPING DEPT.

Two railroads run their cars to our doors. From a dozen to 20 men are kept busy loading and packing the 175 to 200 carloads we ship every year, besides the thousands of less than carload shipments. Eight express trains a day. With large warehouse packed full and a great factory it is a little wonder that Roots have gained a reputation for promptness in filling orders for the hundreds of things in their catalog.

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Two large cylinder presses; 3 platen presses; paper folder, trimming, cutting and stitching machines; skilled typesetters, printers, book-binders—all help to turn out semi-monthly the large issues of *Gleanings in Bee Culture*; the five to ten thousand A B C books every year; together with our 500,000 supply catalogs, not speaking of the numerous other catalogs, booklets, labels and all varieties of printing. Two carloads of paper required for our annual catalog, a half carload for our Christmas *Gleanings* alone.

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The office is the brain of the factory. Here are the executive, editorial, advertising and book-keeping heads. Here the thousands of details are cared for. Root's office is as modern as you can find anywhere. Six typewriters are kept busy; adding machine, copying machine, vertical letter files, card indexes, etc.—everything to care for the half million dollars worth of business we do yearly. We have every interest of the bee-keeper at heart. We are working for your good, for your prosperity means ours.

The Compliments of the Season to Our Friends All Over World.

Our Catalog for 1906 is ready. Write for a copy if you want it now.

THE A. I. ROOT COMPANY, Medina, Ohio

ESTABLISHED IN 1861 THE AMERICAN OLDEST BEE-PAPER IN AMERICA

BEE JOURNAL

(Entered at the Post-Office at Chicago as Second-Class Mail-Matter)

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GEORGE W. YORK, Editor

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Editorial Notes and Comments

A Happy New Year

to every reader of the American Bee Journal—throughout all of 1906—is our wish.

The Annual Index in January

Owing to the meetings of the National Bee-Keepers' Association and the Chicago-Northwestern Bee-Keepers' Association last week in Chicago, it was impossible for us to get out the usual annual index for 1905 that we have published for years in the last number of the American Bee Journal for the year. We will, however, put it in some number for January, in such form that it can be removed and placed back with this number for binding purposes.

Massachusetts People as Honey-Eaters

Burton N. Gates says in the American Bee-Keeper, "Honey consumed in Massachusetts is one-fourth State product," and 200 tons are imported from other States. That would make 66 tons produced in the State, and 266 tons in all consumed, or some 530,000 pounds. That looks like a good deal of honey, but when it is divided up among the 2,805,000 inhabitants, it figures out only about 3 ounces as the yearly ration for each man, woman, and child in the State. Surely, there can not be very much stomach-ache in Massachusetts as the result of over-eating of honey.

Size of Winter Hive-Entrances

A wide gulf exists between views entertained in Ohio and in Canada. The editor of Gleanings says:

"An entrance 4 inches wide and $\frac{1}{4}$ -inch deep we have found to be quite sufficient. This will usually keep reasonably clear. I should prefer an entrance only one inch wide, but there is a liability that the bees will clog it up."

In the Canadian Bee Journal, page 219, "York County Bee-Keeper" says that after experimenting with entrances of different sizes, he is convinced thoroughly that for his locality a fair-sized entrance is necessary for best results, and this winter nearly every one of his colonies will go into winter quarters with entrances equivalent to 5 square

inches. The editor thinks small winter entrances are regular death-traps for strong colonies, having made experiments with them that he has no desire to repeat, and says he has had best results with full-width entrances $12 \times \frac{3}{8}$.

One would think that if there is any difference, smaller entrances would be needed in Canada than Ohio, and when such a wide difference of views exists as to demand an entrance $4\frac{1}{2}$ or more times as large in the colder country, one can but wish that the Canucks and the Buckeyes would fight it out to a finish, so that one might know what is the best practice in this really important matter.

Interstate Pure Food Law

Of the 27,000 words of President Roosevelt's message, one paragraph is of special interest to bee-keepers. It is this:

"I recommend that a law be enacted to regulate interstate commerce in misbranded and adulterated foods, drinks and drugs. Such a law would protect legitimate manufacture and commerce, and would tend to secure the health and welfare of the consuming public. Traffic in foodstuffs which have been debased or adulterated so as to injure health or to deceive purchasers, should be forbidden."

Whether any action will be taken upon the President's recommendation remains to be seen. There is a big lot of money invested in businesses that a law of that kind would not help, and there is the conservative Senate on the watch against doing anything too rash in the interests of the common people. But we will wait and see, and in any event President Roosevelt deserves thanks for doing his part in this particular matter.

Getting Rid of Ants

We often receive requests for directions for getting rid of ants. Here is one taken from The Garden Magazine:

A few years ago the ants took possession of my yard and built mounds or "ant-hills" all over it. I tried all kinds of remedies, among them Paris-green, London purple, corrosive sublimate, white hellebore, borax, tobacco, kerosene (or, rather, gasoline) and chloroform. With exception of the last two, all were used as solutions or mixtures in water. The solutions were gradually increased in strength till they killed plant-life with which they came in contact—but they didn't kill the ants. Chloroform gave them a brief vacation only, while gasoline killed not only the ants, but all the plants near by whose roots were affected in the least degree, seemingly, by the oil.

Finally, I found a cure for the pest in a mixture of Persian insect powder in water— $\frac{1}{4}$ pound in a gallon of water. The mixture does not injure plants, though one thorough application destroys the ant-nest. Use pure powder, for much of the powder sold is badly adulterated, and hence of

little value. Use freshly-made powder, for unless kept dry and in air-tight containers after being made, it loses gradually its insecticidal powers.

Put a quarter of a pound of good powder into a watering can (or other vessel with spout, from which a small stream can be poured) and add a little water; stir until powder is thoroughly wet, and then add the balance of the gallon of water.

Keep stirring the mixture while using, and pour the mixture slowly into the tunnels of the ant-hill till they are all filled. In my experience one application destroys the colony.
H. S. JEWETT, M. D.

We suppose the Persian insect powder mentioned can be bought at any good drug-store.

A New Wax-Extractor

Arthur C. Miller, who is so often a disturber of existing opinions, believes that there is an objection to the wax-press, because the pressure, while pressing out the wax, at the same time has a tendency to hold it where it is. So he has invented a wax-extractor that works on the principle of keeping the mass as loose as possible, stirring it up repeatedly in the hot water. The following description of his extractor is given by him in the American Bee-Keeper, a patent being applied for:

"It consists of two cans, one within the other. The outer can, shown in the cut, has a conical cover with an outlet pipe for the wax, a faucet for the withdrawal of water, and an inlet for water. Through the top of the conical cover passes the shaft which moves the inner mechanism. The inner can has a perforated bottom and top, the latter being removable. Within this can and attached to it are parts of the grinding apparatus, and attached to the shaft which passes through the middle of the can are corresponding parts.

"The method of operation is simple in the extreme. After removing both covers hot water is poured in until the can is one-half to two-thirds full. Then comb is put in until the mass is up to the top of the can, then the covers are replaced, hot water added through the funnel on the cover, and as soon as the fluids reach the apex of the cone, the wax begins to flow out. The crank is then turned for a few minutes, more water is added, and more wax escapes. Where the water appliances are convenient, a small but steady stream of hot water may be allowed to flow in, and the wax will flow as steadily out. When all of the wax has escaped, the faucet is opened, some of the water drawn off, covers removed, the inner can (which contains all the refuse) is taken out, emptied, and returned to its place, and the process repeated. It will be observed that it is thus necessary to use but a little fresh water with each change. Furthermore, it is not necessary to have the extractor on a stove. When it is used in the open air or in a cool or unheated room, it is advantageous to have the extractor protected with a jacket or wrapping of cloth or paper to conserve the heat."



Please send us Names of Bee-Keepers who do not now get the American Bee Journal, and we will send them sample copies. Then you can very likely afterward get them subscriptions, for which work we offer valuable premiums in nearly every number of this Journal. You can aid much by sending in the names and addresses when writing us on other matters.



Miscellaneous News & Items

Dadant Methods of Honey-Production.—Beginning with the first number of the American Bee Journal in January (next week), Mr. C. P. Dadant will commence a series of articles, giving in minutest detail the very successful methods of honey-production practiced by himself and his late lamented father for so many years. These articles will be illustrated, and will be worth dollars and dollars to the readers of the American Bee Journal who wish to make money in bee-keeping.

Be sure to renew your subscription promptly (if not already renewed for 1906), so as not to miss any of Mr. Dadant's valuable articles.

Apiary and Home of R. F. Wutzke.—The following was sent us by Mr. Wutzke:

Owing to the sudden changes of weather the past season, my bees could take but little advantage of the heaviest honey-flow.

At the beginning of last spring I had only 2 colonies. My intention being to increase my apiary, I immediately purchased 25 3-frame nuclei, each of which became a strong colony.

I have just counted my colonies, and found I have 65, from which I obtained 410 pounds of honey. I have to-day (Nov. 8) just completed a new landscape containing ten times the area of my present apiary, which I expect to occupy next spring.
R. F. WUTZKE.

The Apiary of J. M. Buchanan.—When sending the picture shown on the first page, Mr. Buchanan wrote thus:

I am mailing you a photograph of my apiary. I have about 30 colonies of Italian bees, and a few Caucasians, and shall give the latter a thorough test next season.

Bees winter here on the summer stands with no protection. I am running for comb honey exclusively, and sell all I can produce at 15 cents per section.

J. M. BUCHANAN.

The Bee as an Emblem.—Mr. C. G. Chevalier, of Maryland, wrote us as follows recently:

GEORGE W. YORK & CO.—The clipping herewith is from the Philadelphia Press, concerning the use of the bee as an emblem by Emperor Napoleon. Many of your readers will no doubt be interested in reading the translation of Book IV of Virgil's Georgics, written in the year 31, B. C. The subject of the fourth book is the management of bees; their habits, economy, polity, and government are described with the utmost fidelity, and with all the charm of poetry.

Virgil first describes a beautiful location for the apiary, then follows with advice as to the kind of hive most desirable. After giving some information regarding the treatment of swarms, the present-day reader will be astonished to learn that he instructs one to clip the wings of the "kings" (which we now know to be queens).

While we know that many of Virgil's ideas are erroneous, as illustrated by the above paragraph, as well as by his statement that they cull their progeny with their mouths from leaves and fragrant herbs, still the whole article is full of good advice even to the modern bee-keeper, and the reading of this chapter will surely be a pleasure to any one interested in apiculture.

Yours truly,

C. G. CHEVALIER.

The clipping referred to by Mr. Chevalier is as follows, being a reply to the question, "Can you give the reason for Napoleon using the bee as an emblem?" sent to the Press by one of its readers:

"When it was decided in 1804 that the First Consul should assume the title of Emperor, the dignity to be hereditary, Napoleon had elaborate searches made into the stately ceremonials of royalty. Much pains were taken to ascer-

tain the court etiquette that prevailed under the ancient regime. It was already known that the original symbol or insignia of royalty in France was the bee. This preceded the fleur-de-lys. In fact, many heraldic authorities held the opinion that the fleur-de-lys was only a conventionalized form of the bee with outspread wings. In adopting an imperial emblem, Napoleon went back beyond the fleur-de-lys of the monarchy and restored the bee for the device of the Empire."

National Legislation to Suppress Bees.—Certain people of a certain Iowa town seem to have had a hard time to get their names in the newspapers, so they hit upon the plan to petition Congress to prohibit the flight of bees in their little burg of Defiance. The Chicago Record-Herald of Dec. 10, contained the following account of the efforts of certain "otherwise" people to wipe out bee-keeping:

The people of Defiance, Iowa, have petitioned their Congressman to draft a Bill, or to use his influence in the promulgating of legislation to rid the country of the common honey-bees running at large. Congressman Smith has been very much amused at the unique request, which came to him in the form of a petition signed by 125 voters, residents and citizens of the village. The petition reads as follows:

"We, the undersigned citizens and residents of Defiance, Iowa, and vicinity, realizing the great damage done each year by reason of the common honey-bee roaming about and running at large in our cities and towns, by their continual biting and sipping of the precious fruits and beautiful flowers, to say nothing of their constant buzzing about one's ears from early morn till late at night, and their frequent stinging, do hereby earnestly and humbly pray you, as our representative, to prepare and introduce, and use your best efforts to have passed, a very stringent law forever prohibiting the running at large and roaming about our public streets, in our cities and towns, and especially the town of Defiance, all honey-bees of whatever variety or species. By so doing you will not only be rendering a great public service, but will place us under great obligations to you."

The much-bothered and overworked Congressman replied that he knew of no part of the national federal Constitution delegating the power upon Congress for the enactment of such legislation, and assured his constituents that if he ever found any clause of the Constitution of the United States authorizing such a law as that petitioned for, he would first insist upon the power being exercised by prohibiting house-flies from running at large on his premises. He also added that in case the State of Iowa first drafted and passed such a law he would rest assured that he would feel safe to visit Shelby County without being stung.

We wish here to thank several of our readers who kindly sent us clippings of the above item in various forms. Of course, it is all very amusing to bee-keepers, and doubtless served its purpose for the Defiance population.



Contributed Special Articles

Selling Honey Direct to Consumers

BY J. L. STRONG.

IN 1869 I took the first honey with the extractor. This I thought would be appreciated by the consumer, but, to my surprise, I could not induce any of my neighbors to try even a pound of it. So I put it in Mason fruit-jars and left it with my grocer, with the same result, until about Christmas, when I took them home. This was very discouraging, as I only had two jars to sell, and from that time to this there has been very little comb-honey used on our table, while the extracted has been in demand nearly every meal.

I now have a trade that enables me to sell my entire crop to the consumer. I am an economical man, and do

not sell 10 cents' worth in a 5-cent bottle, to be thrown away as soon as empty; too much work for the producer, and too much waste for the consumer. It is all right for the city trade, as there are a few of the wealthy class who care but little for a few cents cost, if the article pleases the eye. This class of consumers buy but little honey.

I prefer to put up honey in pails—something that will be of value after the honey is used. These pails are of different sizes, holding from 5 to 25 pounds, and cost about one cent per pound of their capacity. I give the customer the privilege of returning the pail if he wishes to do so, in case he lives near. If at a distance, and he does not bring anything to put the honey in, then I quote price of pail and honey, and give him first price of pail when returned.

Now as to how I have worked up a trade from nothing to the entire crop from 200 colonies:

I often meet one who asks, "How are the bees doing?" I tell him in a few words as possible. I also tell him what I have to sell, and quote prices, and if I have time I give a short talk on the values of honey as a food and a medicine. In this way I often interest several and take orders for several dollars' worth of honey from different ones.

I also have a "honey list"; this consists of the names and addresses of those who have bought honey, or will be likely to do so in the future. Then when I have honey to sell I quote prices on a postal card to each name on the list, and tell how it is put up. For this trade I use 60-pound square cans, screw top, while the honey is liquid; and after it has candied, lard cans, with loose top, do better, because it can be easily crated for shipment, and when received the cover can be taken off and the honey dug out without cutting the can or melting the honey. The second-hand lard can costs 16-2-3 cents each, and holds 75 pounds net of honey.

The prices at which I have sold extracted honey have been from 7 to 15 cents a pound; the latter when we have had a short crop, to save some for medicine, as they expect me to have honey at all times, and they have not been disappointed.

The past season I have sold at 8-1-3 cents, while I was extracting, but now at 10 cents; and as I have but 200 pounds left, I will sell the balance at 12½ cents.

There is but little sale for chunk honey in our market, as the broken comb is objectionable. We can sell section honey if nice, but only in small quantities, and not at enough higher than extracted to pay the difference in cost of production.

I have sold six 60-pound cans in one order this season, probably to be divided among his neighbors.

My crop this season was 2,000 pounds of extracted, and 350 pounds of comb honey—all gathered in the month of June from white clover, and it was fine.

Clarinda, Iowa.



A Consideration of Nectar and Honey

BY ADRIAN GETAZ.

THE nectar gathered by the bees on the flowers, and the fully ripe honey, are really two different things. The nectar contains about three-fourths of its weight of water, the remainder being sugars. Of these, the largest part is cane-sugar—the same kind as constitutes the white granulated sugar bought in the stores. The others are like those found in the fruits and the corn syrup—they are usually called inverted sugars. There is also an excessively minute quantity of essential oils which give the different kinds of honey their peculiar taste, color, and, perhaps to a slight extent, odor.

On the other hand, the ripe honey contains only one-fourth water, or about that proportion. And nearly all the sugar is now inverted. A small proportion of mineral matter, probably due to the pollen, is also found. Some formic acid has also been added by the bees. To that acid is due the peculiar taste common to all honeys, and also its keeping qualities.

During the transformation a considerable change of taste or flavor has taken place. The nectar has only an insipid, indifferent taste. An eminent writer calls it a "silly taste." The taste of the honey need not to be described here, as all the readers of this paper know it.

THE TRANSFORMATION.

There is no doubt that a part of the water contained in the nectar is separated and rejected by the bees at once, during the gathering and the time of going back to the hive. Some analyses of the nectar gathered during the day have shown such a large loss of water that there is no doubt that a part of it must have disappeared before reaching the hive. A few years ago a French apiculturist undertook to feed his bees out-of-doors. He made a syrup of sugar and water in about the same proportions as found in the nectar of the flowers, and placed the feeder at a distance of about a hundred yards from the hives. The ground and the grass over which the bees were flying was wet all the time with the water ejected by the bees. That water was tasteless, showing that a complete separation had taken place. A report of the experiment is found in the *American Bee-Beeper* for August, 1905, page 162. In the early editions of the "A B C of Bee Culture," A. I. Root states that when the bees were gathering nectar heavily from a patch of honey-plants near by, he could see, in the morning, by placing himself on the path they were following, the ejected water as a kind of mist from their bodies. Other cases have been observed.

During the following night the nectar is handled by the bees; that is, they take it in their honey-sacs, and out and in again, and finally deposit it in the cells. During the process more water is eliminated, and formic acid and probably other substances contained in the bees' saliva are added. The honey is not ripe yet. Gradual changes occur slowly under the influence of the heat of the hive, and after some weeks, more or less, the nectar has become honey. Its composition has changed completely; it now contains only about one-fourth water, and nearly all the sugar has been inverted. The consistency has become like a syrup, while the original nectar was nearly as limpid as water. The taste has become rich, sweet, and delightful.

THE HONEY-FLOW.

Important questions are, What are the atmospheric conditions which produce a honey-flow? What may be the influence of the nature of the ground on the honey-plants? or what other cause may exist?

There is no doubt that the richer the ground, and the better adapted to the honey-producing plants, the more nectar will be produced. The European writers say that more nectar is produced on limestone ground than on others, excepting a few plants that do not prosper on limestone land.

The temperature has a marked effect. Buckwheat, for instance, will not yield nectar unless the nights are cool. On the other hand, the tropical plants require a very high temperature. Each plant seems to do the best at a certain temperature.

The most important condition for a heavy honey-flow is an abundant moisture in the ground. The plants are constantly pumping water from the ground, most of it having been absorbed through the leaves, some helping to form the leaves, branches, fruits, etc., and the nectar. When the supply of water begins to run short, the growth of the plant is retarded, and soon the flow of nectar ceases. Later the leaves begin to wilt during the day, but recover during the night. If the drouth continues they fail to recover, and finally the plant may die entirely, or at least the portion above the ground.

When the effects of the drouth begin, the flow of nectar occurs in the morning only, some time before ceasing entirely. During the night no absorption of moisture takes place, but the water contained in the ground continues to ascend. This, helped by what the dews furnish, enables the plants to produce nectar for a few hours in the morning. I have often seen the hives almost empty of bees in the early part of the day and then at perhaps 9 or 10 o'clock, or later, all the bees come back and hang at the entrances in big bunches until night.

Some of the plants blossom only in the morning, and their blossoms last in some cases only a few hours. Such, of course, necessarily yield only in the morning.

A cause of mistake is that the bees work in preference on the flowers or other sources of sweet substances that yield the most. Very often we read that such or such plant yields nectar in a certain locality but not in another. The probability is, at least in most cases, that there was some other plant in one of the localities that yielded more than the one considered.

Some plants require much less moisture than some others to grow and produce nectar. Those with long roots will resist the drouth much longer than those with short roots, being able to reach whatever moisture may remain deep in the ground after the surface has already dried up completely. The trees will, of course, resist the longest, and depend chiefly on the amount of water stored up deep in the ground during the winter, while the plants, especially those with short roots, depend on the summer rainfall.

HONEY-DEW.

All the honey is not gathered from the flowers. Some of it comes from the juices of broken fruits; some from the cider mills; some from the watermelon rinds thrown away; some from the confectionery shops. Any sweet, anything containing some sugar, inverted or non-inverted, is gathered by the busy bees.

A large portion is honey-dew. There are different kinds of honey-dew. Some plants have, besides the nectaries in the flowers, some in other places, usually at the base of the stems of the leaves. These extra-nectaries produce a real nectar like that of the flowers. The pear-trees, cotton, and cowpeas, are the most conspicuous examples.

The real honey-dew is seen in drops on the leaves of several kinds of trees, oaks, ashes, hickories, etc. Not only the leaves but the ground around and under the trees is sometimes completely bespattered with it.

It might be thought at first that the honey-dew is secreted by the leaves themselves, but it is on the upper surface only, and in drops here and there. If it was a secretion it would be all over the leaves, since their structure is the same all over. Again, if it was a secretion it would reappear after the drop is wiped off, but it doesn't, showing, therefore, that the drops have fallen on them.

If we look at the under side of the leaves we will see here and there some small green insects of the kinds known as plant-lice or aphides. If now we climb the trees we will find them by thousands on the young twigs and new leaves about the top of the tree—enough of them to account for all the honey-dew produced. At least that is the report of all who have done any climbing.

It is not necessary to climb trees to see how the honey-dew is produced. Plant-lice are found on many plants and bushes. Those on the rose-bushes are the easiest to observe. With a cheap magnifying glass they can easily be examined. They suck the sap of the leaves and twigs with a tongue similar to that of the bees. This sap constitutes their food, and what remains is ejected through two tubes, situated at the other end of the body. The quantity produced is astonishing. Bees of all sorts, wasps and ants are seen helping themselves even to the extent of sucking it from the ejecting-tubes.

Occasionally, some kinds of scales and other insects are numerous enough to produce some kind of honey-dew. This is usually of the worst quality possible.

The regular honey-dew from plant-lice is, in my locality, at least, of tolerably fair taste. Its color is like a light amber honey to which some ink might have been added. It is much darker in some years than others. In mountainous districts we get some honey-dew from the firs and spruces. This is very white and has a strong, resinous taste. This resinous flavor disappears in the course of four or five months, in the sealed comb honey as well as in the extracted.

Honey-dew contains only inverted sugars.

Knoxville, Tenn.

Work in the Apiary for January

BY C. P. DADANT.

THIS is the month when there is the least work in the apiary. Our attention consists only in trying to keep the snow from the alighting-board. Yet in the very coldest weather we allow it to remain there, even if it obstructs the entrance, because it is a warming blanket which intercepts the wind and permits the air to sift through. I used to think that hives that were snowed under were in danger of smothering. This opinion was changed very materially when I visited the apiary of a box-hive bee-keeper some 25 years ago and found that his hives were entirely lost in the snow. The location of

some of them was indicated only by a slight elevation—a sort of mound of snow. These hives were lying close to the ground and the spot was well sheltered, so that the snow had gathered there. It was a warm day and I suggested to the owner that it might be well to give the bees some air. We did, and I believe we did them more harm than good, for many of the bees had a flight and were lost. I do not think that they needed it. Their hive was so well protected that they did not feel the changes of temperature as they must have felt them after we liberated them.

In our movable-frame hives, which are up from the ground and have more or less upwards ventilation through fissures in the cover, I believe that there is not the least danger whatever of having the bees smothered by leaving them buried in the snow, or by doing as one of our oldest bee-keepers does—covering them up with snow, when it is plentiful and the weather down to the zero mark.

He holds that the more they are sheltered by the snow, the better they fare, and this is very probably correct as long as the cold days continue.

But there is a reverse to this. It is when the snow melts and changes to ice. If the hive has no upward ventilation or fissures through which air may enter, the entrance and lower joints may be frozen entirely fast, when the question of smothering would be a matter of only a few days.

Again, if warm weather comes and the snow melts off, it becomes necessary for the bees to take a flight. They think so, at least, for they begin to worry and seek the entrance. It is at this time that the cleaning off of the snow from the entrance proves useful. If the hive is sheltered with snow from all sides, but the alighting-board is clean, the bees are sure to find a dry spot when they come out.

But why not keep them confined when the snow is on the ground? Well, you may try it if you choose, but the trials we have made at confining bees on warm days have always been disastrous. They fret and worry, and if they are loaded with feces they are often compelled to discharge them within the hive. We have concluded that it was a mistake to confine the bees, even in snow-time, if it is warm enough for them to fly. Yet, if they have not been long confined, and the snow is deep, and the weather rather doubtful for a flight, they may be induced to remain quiet by sheltering the hive from the rays of the sun for the few warm hours. A very good plan, if you use movable roofs over the top of the hives (and this should be done), is to turn the roof on edge, in front of each hive for the time of their flight. This keeps the sun's rays off and they will not worry. But if it is warm enough for them to fly, and they insist on coming out, then turn this roof completely over, on the snow, in front of the alighting-board, and you will have a good dry spot on which they may alight without settling down on the snow, for the bee that alights on the snow in January, unless it be an exceptional day, is seldom able to regain its hive.

The prevention of mice is important. When the entrances have been worn to a sufficient size to admit of mice, they may be reduced with a metal strip that will cut the height of the entrance to about one-fourth inch.

The colonies in the cellar will keep quiet this month. An occasional glance at them will indicate their needs. Darkness, sufficient air, and an even temperature of about 40 degrees, will insure absolute safety. It is pleasant, when the north wind is roaring during a cold January night, to go down into the cellar and listen to the gentle murmur of the bees, which will delight our ears again next May by their hum, while they fly about the blossoms and help the fertilization of our fruits. Hamilton, Ill.

Honey as a Health-Food.—This is a 16-page honey-pamphlet intended to help increase the demand for honey. The first part of it contains a short article on "Honey as Food", written by Dr. C. C. Miller. It tells where to keep honey, how to liquefy it, etc. The last part is devoted to "Honey-Cooking Recipes" and "Remedies Using Honey". It should be widely circulated by those selling honey. The more the people are educated on the value and uses of honey the more honey they will buy.

PRICES, prepaid—Sample copy for a two-cent stamp; 50 copies for 70 cts.; 100 for \$1.25; 250 for \$2.25; 500 for \$4.00; or 1000 for \$7.50. Your business card printed free at the bottom of the front page on all orders for 100 or more copies. Send all orders to the office of the American Bee Journal.



Convention Proceedings

Report of the Worcester Co., Mass., Conventions

The Worcester County Bee-Keepers' Association began their winter series of meetings Nov. 11, 1905. The first meeting of the season was of an informal nature, reports from different bee-keepers in this vicinity being heard.

The season was not, as a whole, a very profitable one. The average amount of honey was about 30 pounds; 589 pounds was the largest amount reported, and that from a small apiary. One of our heaviest bee-keepers works almost entirely for increase, and does not aim to produce much honey.

Only one bee-keeper reported any diseased brood, and that from a district that has had trouble before.

The matter of holding an apiarian exhibition in the near future was brought up and left in the hands of a special committee.

James Wheeler was announced as a future speaker, likewise Arthur C. Miller, of Rhode Island, who has spoken to us several times before.

These topics were suggested as suitable ones for future meetings:

"Honey, its composition, uses, and value as food," "History of bee-keeping from Greek and Roman times up to the present date," "History and methods of artificial increase," "History and methods of queen-breeding," "Anatomy and structure of the bee and relations to the colony," "Bee tongue, its lengths and parts, and relation to red clover," and "Methods and difficulty of wintering."

The following is something further concerning the meeting of Nov. 11, 1905:

There is money in the production of wax, for pure, unadulterated beeswax is in great demand, and jewelers and people in many other lines cannot get along without it, and will pay from 50 to 75 cents a pound for it gladly. Not nearly the amount of beeswax consumed in this country is supplied by bee-keepers of the United States, and much of it comes from Mexico and the West Indies.

Much interest is being manifested by people of the county in the keeping of bees and the production of wax, and at the close of yesterday afternoon's meeting five new members were admitted to the Association. These were Fred Rich, S. H. Cheney, E. C. Putnam, C. H. Harris, and Hon. Ledyard Bill.

The meeting was called to order by Pres. F. H. Drake, of East Brookfield. It was well attended, between 40 and 50 members and guests being present. Charles R. Russell was the speaker of the afternoon, and talked on

WAX, ITS DISCOVERY, FORMATION, USES, ADULTERATIONS, AND PROPER WAYS OF EXTRACTING.

After his talk, Mr. Russell and Arthur C. Miller showed how wax is extracted. Mr. Miller using a machine of his own invention, while the speaker used the Ferris wax extractor.

The lecturer also showed how pure wax is tested in benzine and alcohol and water, having several jars and bottles on exhibition.

To make his statements regarding the great market for wax even more emphatic, Mr. Russell read a letter which he received from E. F. Phillips, acting in charge of agriculture in the United States Department of Agriculture at Washington. This was in answer to a letter written by Mr. Russell, and was as follows:

"I am unable to give you an estimate of the amount of beeswax produced in the United States annually, because I have no information on which to base the estimate. You may be interested, however, in knowing that in 1903 the importation into this country amounted to 488,576 pounds, valued at \$127,220. Wax was imported to a large extent from Mexico and the West Indies, and the importations for 10 years back show a very decided increase.

I am sorry that I can give you no information as to the domestic production of wax.

"You may be interested in some things which were found by the bureau of chemistry of this department. Samples of comb foundation were examined from all over the United States and no adulterations were found. However, three samples were received from Canada which were not pure and, it is claimed, that a considerable portion of the comb foundation used in Europe contains paraffin or cerasin.

"Not long ago I was talking to the chemist who has charge of the beeswax analysis in the bureau of chemistry, and he said it was a very difficult matter to be perfectly sure of adulteration in wax. He showed me a cake which had every appearance of being pure beeswax and of a very decided odor, which is so characteristic. He said that an analysis of this showed that it was pure cerasin, and that the odor had been given to it by the use of some chemical. It contained absolutely no beeswax, but had a melting point exactly the same as that of pure wax. All manner of substances are used in adulteration, including not only paraffin, cerasin, and similar waxes, but also such things as starch.

"It is then certainly to the interest of bee-keepers to watch this adulteration very carefully and to run down all cases of adulteration that can be found, and thus increase the value of pure wax, which now brings such a low price."

It was announced that the committee appointed to consider the apiarian exhibition had decided that next fall would be the best time for such a fair. It will take as long as that to complete all plans for such an exhibition.

Mr. Russell said in part: "I have often wondered why someone did not volunteer to give us a little talk on wax, and by wax I mean beeswax, not the vegetable production.

"Wax, you know, stands second to honey among bee-products. Before I am through talking I am going to try to show: First, what wax really is, when and by whom discovered, how formed; second, mode of extraction; third, uses of wax; fourth, value of wax, amount produced, tests for purity, and the like.

"First, what is wax? All bee-keepers and others perhaps have watched the bees entering the hives with their hind legs covered with large masses of colored matter which we have learned from various sources was pollen. We have also noticed the different colors produced, most generally some shade of yellow, or orange, although crimson, green, or even black, may be seen. This pollen was considered by the ancients to be wax and was called by Reamur, a French natural philosopher of the early part of the thirteenth century, 'crude wax.'

"This opinion was overthrown by the discovery of a French peasant in 1768 that the substance used in the construction of a comb emanated from between the rings of the abdomen. Even at this early date there were bee-keepers' associations, and I found that this peasant was a member of one of these societies. The real discoverer of wax, however, is disputed.

"In 1769 Francois Huber, a blind bee-keeper of France, assisted by a faithful servant, repeated the discovery of the French peasant, and experimented in a manner that has made his name famous.

"On the abdomen of the bee there are 12 plates, 6 on a side. I will quote from authority: 'If the abdomen be elongated there will appear extremely smooth and delicate expansions upon which plates of greater or less size and thickness may be discovered. These pale, yellow, tender discs are 8 in number, 4 on a side. The contour of the membranes determines the form of the wax scales which are molded upon their surface as the secretion passed from the glands beneath.'

"We have not come to the point where we are ready to answer that important question, 'What is wax?' Cheshire says: 'Wax, like every secretion, vegetable or mineral, is at first a liquid. It is derived from the blood by cell-action, and then transuding the structureless membranes, assumes the solid form of the scale.' He further says: 'Wax is not chemically a fat, yet it is nearly allied to the fat in atomic constitutions.'

"Langstroth says: 'Wax is a natural secretion which is produced by bees, as cattle produce fat by eating. The first condition indispensable for bees to produce wax is to have the stomach well filled.' Nearly all authorities tell us that wax is formed after gorging or overeating.

"It takes about 24 hours for a bee's food to become transformed into wax. It is more noticeable in young

bees than old, working on the general supposition that it is more difficult to fatten an old animal than a young one.

"These wax scales are so small and light that 100 of them hardly weigh as much as a kernel of wheat. That these scales also differ from the wax of the comb has been readily shown. The scales are carried to the mouth of the bee and there masticated with a salivary secretion, imparting to it the quality of ductility.

"Two experimenters have stated that bees use about 7 pounds of honey to produce one pound of wax. You can readily see, therefore, that feeding for wax is not profitable.

"Under my second head, 'Mode of extracting wax,' I can speak more from my own observations and experiments. There are many ways and devices for extracting, but the prime factor of them all is heat. The solar extractor, I thought at one time, was the best thing that could be invented, but when a spare day came to me, and that day was cloudy, and I had a lot of old comb on hand, I concluded I must try something else. My solar extractor was made similar to all others. It is not successful at all times in this climate, for the sun's rays are not hot enough excepting for a comparatively short time. There is another serious objection to the solar extractor. You cannot use in it old comb filled with cocoons.

"The Ferris extractor has been a great help to me, although the first time I used it I ran against two or three snags. The Ferris consists of an outside boiler, an inside basket and a screw press. One thing I like about the extractor, you can put in a whole frame and clean it off in a short time."

Mr. Russell stated that his principal objection to the Ferris extractor was that one must take time if he wanted to get the wax from the center. The invention of a new extractor by Mr. Miller does away with that, and Mr. Miller demonstrated how it worked.

Mr. Russell said further:

"Under my third head I am going to mention briefly the principal uses of wax. Wax enters largely into the make-up of candles. Several authorities state that the Roman Catholic church prefers candles made of pure beeswax, while one authority says: 'It is prescribed to priests to use exclusively wax produced by bees.'

"The women are very familiar with waxed threads, but there are so many adulterated pieces sold that they wonder sometimes what they are using. Floors are polished with waxine or something that contains wax. Wax also enters into ointments. Sculptors and painters have a use for wax.

"Bee-keepers, of course, are at sea unless they have wax for foundation starters for frames or sections. Nearly every farmer uses wax; that is, if they do any grafting at all. In many cabinet shops, in shops where wooden patterns are made, pure wax is used to fill up cracks, cover up screw-heads and preferred everywhere for finished work. There are a thousands and one uses for wax, and sometimes one is led to ask, Is wax second to honey? Ought it not rather to be placed first in commercial importance?

"Fourth and last, we have the value of wax, amount produced, tests for purity, and the like. It is impossible to get at the actual value and the amount of wax produced.

"There are several vegetable waxes used in adulterations. Japanese wax is obtained from the small-stone fruits of several species of rhus cultivated in Japan. This rhus is akin to our stomach.

"Then there is the myrtle-berry wax, obtained from the fruit of the myrica.

"Carnuba wax is an exudation on the surface of the growing leaves of the carnuba palm, which flourishes in tropical countries of America.

"Palm wax is also an exudation found on the stems of two other South American palms.

"Other adulterations are: Parffin, a product of distillation of many organic substances.

"An American petroleum contains very little paraffin, cerasin, a gummy substance, starch, tallow and other greases. It is a matter of fact if you want to adulterate anything, adulterants can be readily found.

(Continued from page 883)

See Langstroth Book Offer on another page of this copy of the American Bee Journal.



Our Sister Bee-Keepers

Conducted by EMMA M. WILSON, Marengo, Ill.

Some Proper Questions for Sister Bee-Keepers to Answer

If you were to meet one of the bee-keeping sisters, what are some of the things you would like to ask her, supposing you thought it would not be considered impertinent? Perhaps something like this:

"How many colonies did you have last spring, and how many in the fall? How much honey did you get, and was it comb or extracted?"

You wouldn't think it impolite to be asked those questions, would you? Well, suppose each sister sends in the answers. You may be sure it will make interesting reading. As the advertisement writers say, "Do it now, before you forget it."

Getting Unfinished Sections Emptied

On page 810 I noticed an item by one of our bee-keeping sisters, stating that she could not get her bees to empty honey-sections. Here is my experience:

I take the supers which have not well-filled sections and place on top of the hive, next to the brood-frames, and scrape or puncture the cappings, and you may be sure the bees will empty the sections quick enough.

St. Ansgar, Iowa.

(MISS) ANNIE KNUTSON.

Yes, that works well in many cases, but for some unknown reason it can not be depended upon in this locality. The bees will clean up the cells that are punctured, but that's as far as they will go. Perhaps if they were scarce of honey in the brood-chamber, the case would be different. Thank you, all the same, for telling us about it.

Honey Drops

Blend $\frac{1}{2}$ cup of extracted honey or rich maple syrup, 1 teaspoon butter, 1 egg, well beaten, $\frac{3}{4}$ cup of flour, sifted with $\frac{1}{2}$ a teaspoon of baking powder and a pinch of salt. Drop by teaspoons on a tin, and bake in a quick oven. These proportions will make about 20 cakes. Icing may be of maple or fondant.—Good Housekeeping.

Converting Wax-Scrapings into Marketable Shape

How can I convert the wax-scrapings into marketable shape? I have a large quantity that I have accumulated by scraping the sections (after removing the honey), and in other ways.

MRS. C. D. WIGGIN.

It is hard to get beeswax into anything but marketable shape if you get it separated from the combs at all, for no special refining is needed. Indeed, some comb-foundation makers prefer to get it without any attempt at cleansing such as is done with acid. If you have a large amount of wax to render year by year, the best thing is to get a wax-press. Probably, however, the amount you have would hardly call for that outlay. A solar wax-extractor costs much less, although it does not make as thorough work in getting out the wax, especially with old, black combs. The solar has the advantage, however, that you don't have to trouble with any fire-heat, the sun doing all the heating. But, of course, it will work only in hot weather. You can make a solar extractor yourself, if you have any turn in that direction. All that is needed is a box covered with glass, and in it something to hold the combs to be melted, with a vessel to catch the wax. Another plan that will work any time of year is thus given in "Forty Years Among the Bees."

"An old dripping-pan (of course a new one would do)

had one corner split open, and that made the extractor. The dripping-pan is put into the oven of a cook-stove with the split corner projecting out. The opposite corner—the one farthest in the oven—is slightly raised by having a pebble or something of the kind under it, so that the melted wax will run outward. A dish set under catches the dripping wax, making the outfit complete. Of course, the material to be melted is put in the pan the same as in the solar extractor."

It is well to have some water in the pan that catches the wax, and if the shape of the cake of wax does not exactly suit you, you can melt it over again in another vessel with quite a little water in it. The vessel should be flaring outward, so the cake of wax will come out easily, and the vessel should not be iron, which will darken the wax, but tin or some other substance. When the cake of wax has cooled enough to be no longer liquid, but while yet pretty warm, scrape from the bottom the impurities that have settled there. Some wax will be scraped off with the rest, and this can be melted over again.

Noted Sisters Interested in Bees

It is pleasant to note that among those prominent in advancing the interests of bee-keepers are some of the sisters in conspicuous positions. In England the Baroness Burdett-Coutts has for a long time been looked up to as the special patroness of bee-keepers, and in Austria the empress is said to hold the same position. In our own country no less a personage than Miss Helen Gould, it seems, has found time to leave the care of her millions for a few days to look after the interests of birds and bees. A belated item in the papers gives it in this way:

"Miss Helen Gould has consented to visit Warsaw in August as the guest of Col. Isaac Washington Brown, the 'bird and bee man' of Rochester. He has conducted a campaign for the better treatment of birds and bees for several years, and Miss Gould, who became interested in him, has provided means for him to carry his work forward. She will remain several days at Warsaw, conferring with him."



Mr. Hasty's Afterthoughts

The "Old Reliable" as seen through New and Unreliable Glasses.
By E. E. Hasty, Sta. B. Rural, Toledo, Ohio.

FARMERS AND BEE-KEEPING.

H. C. Barnard, on page 795, seems to figure irresistibly that a farmer with 80 acres of land has only the *absolute right* to keep 2 colonies of bees. Many farmers—even many that don't want to keep a bee at all—would dislike to admit that.

SECOND-HAND OIL-CANS FOR HONEY.

If I was a honey-buyer I should refuse to buy honey in second-hand oil-cans at any price whatever. (Can be cleaned; but practically many of them certain not to be.) If actual buyers take the same view, and I think some do, it behooves us to protest the second-hand can serpent whenever and wherever he raises his ill-smelling, greasy head. Vide page 796 This very writer "gives the practice away," if you will only weigh his language closely.

Incidentally, it is interesting to learn that the railroads and the Standard together make the people of Arizona pay 40 cents a gallon for 10 cent oil. Of course, two prices would abundantly pay for transportation; but human greed and what-you-going-to-do-about-it can demand *four* prices. If misery loves company, honey-men out there can console themselves a little.

THE EDITOR'S BACK-YARD APIARY.

Glad to see the Editor's apiary—for the Editor's sake. And real nice, too—with that kind of niceness that does not touch sensationalism anywhere. Page 801.

ABOUT A LADY BEE-KEEPER'S COSTUME.

What a "dialogue" we should have (as the school children phrase it) if we could boil down all the comments lady

readers will make on that costume which appears on the face of No. 47! Possibly somewhat like that below:

MRS. BLUNT—I like it; so there, now.

MRS. TARTE—If that's a woman, I would rather meet a man; and if it's a man, I would rather meet a woman.

MISS DUBLIN—Jist yez kape away from there and ye nadent mate eyther of them.

MISS BOSTON—A secret longing to get into trousers is, I fear, at the bottom of it, rather than any real need of such a garment.

MISS EDINBURG—Whole nations of *men* wear skirts from choice; and it really seems to me that women might get along with theirs, if they tried intelligently, and with no hankering for male attire.

MRS. BINTHERE—When men wear skirts they mostly don't wear them long, nor puffed out, nor exaggerated in any way. I didn't know my apiary dress hindered me until I was told. And Brother Bill says he would much rather wear my rig than the one in the picture.

MRS. GOODSOL—I keep away from bees. If I was obliged to go among them I'd wear 'most anything in which I could feel safe.

And the Afterthinker puts on wisdom like a garment, and adds that lady bee-keepers have several lines of costume open to them, according to personal inclination. One course is to make the clothes they already have the basis, and modify them as little (or as much) as is really needed. Have the underclothes of firm material, and offering no passes of Thermopylae for the enemy to march through. Have a big pocket, or more than one—else a belt with danglets. Have the skirts the opposite of full, and as short as the proprieties seem to allow.

□ Another course is to have a special costume decidedly different from that worn in the kitchen, and still not nearly so revolutionary as the one shown. Room for lots of genius and invention in this middle course.

Probably some would prefer to take man's suit exact, neither less nor more, put it on after entering the apiary and change before going away. This has the important advantage that strangers passing by do not stare.

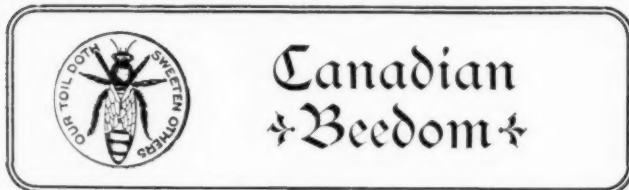
If you do choose the fourth course, and follow the "pictur," how would it do to go a little further? Sew two big slippers to the bottom. From the knee up have them enough fuller than moderate skirts could easily be tucked in. Then don't take off the costume, but jump into them. And when somebody threatens to heave in sight, jump out of them again. Too warm some days—and—and—roaring lions and escaped lunatics sure to pass by on the other side.

AIKIN'S WAY OF CONTROLLING SWARMING.

So Aikin's favorite method of control is big room before the flow, and shake the most of them just as the flow begins. Looks good. But he also masses his shaken swarms to some extent, and that would hardly do for the strain of bees I have at present. Page 805.

GRAPE-PUNCTURING AND BIRDS.

I think past judgment about grape-puncturing was that most is done by small, swift, sly birds, and just at the peep of day, when few people (at that time of the year) have their observation clothes on. This measurably explains the incorrect suspicion that it must be night-birds. Night-birds all flesh-eaters and insect-eaters, I believe. But the sparrow (seen to tear open bags and eat the grapes within) seems to hold the first place in atrocity. Page 805.



Conducted by MORLEY PETTIT, Villa Nova, Ont.

Hershiser Bottom-Board

O. L. Hershiser, of New York State, showed at the Ontario convention at Toronto, a bottom-board which is specially constructed for moving and wintering bees. It consists of a box 3 or 4 inches deep, with wire-cloth in the sides, and a block to close the front. For moving bees I would not exchange it for the Holtermann portico, as I con-

sider it too much machinery to carry under the hive, with not enough advantage to make its use profitable.

Its great advantage in cellar-wintering is the deep space for dead bees, and the fact that a live bee can not fall to the floor with the dead one she is throwing out. It provides the necessary bottom ventilation, and at first sight would be pronounced an excellent invention. But here is the difficulty: We find it is not practical to confine bees to the hive while in the cellar. Weak colonies and nuclei may be confined without serious loss. Though I doubt that. But where strong colonies are so confined there are sure to be some bees that fly to the screen, try to get out, and make noise enough to rouse the whole cellar. This is no theory, but has been proved in my experience.

Bee-Keeping as a Business

The following from an old Farmer's Advocate is apropos the subject of studying and mastering one's business:

"We often hear bees are an interesting study. They certainly are, and the more we study the more interesting they become—and the more profitable. There's the point. While few succeed in a distasteful occupation, not many are in business for reasons other than the desire for board, clothes and extras.

"The difficulty with bee-keeping is that it is not taken seriously enough. The idea is held and taught by all except the few who know differently, that bees are no trouble at all, and every one should have a few in the garden. What is the result? The honey market is in the condition in which the butter market was a few years ago—crowded with inferior goods put up in miserable shape. Those who see honey at our leading exhibitions, and then contrast it with what is taken in "trade" and sold by dealers generally, will appreciate this.

"Progressive bee-keepers welcome others to their ranks, if these new men give promise of being equally progressive. Those entering upon any new undertaking must carefully count the cost, else they fail. The financial expense in this case is practically nothing, and after the first cost the bees should, of course, pay their way or get out.

"Then there is the pasture. Twenty-five colonies to the square mile is probably the outside limit for average localities in Ontario in average years. Now consider carefully that the heavy work in bee-keeping comes at precisely the same time of year and day as in general farming. If the farmer or his son can spare time to produce a No. 1 grade of honey, he will be well repaid; if not, he would better let bees alone."

Bisulphide of Carbon for Fumigating Combs

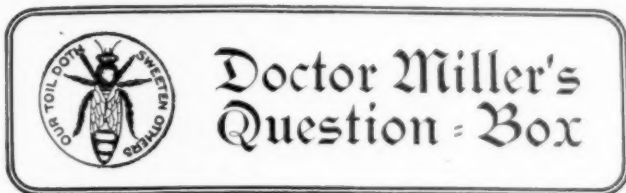
"A York County Bee-Keeper" tells in the Canadian Bee Journal about using 5 ounces of bisulphide of carbon in a box holding 600 Quinby combs. He says:

"About Oct. 10, an article appeared in the American Bee Journal from the pen of that well-known apiarist, Mr. F. Greiner, of New York, in which he stated his preference for sulphur instead of the bisulphide, on the grounds that such large quantities of the latter had to be bought to be effective. Mr. Greiner said that it was estimated that one ounce of the drug was necessary for every cubic foot to be fumigated. According to that, the big box of combs should have had more pounds than I had used ounces, so it was with some trepidation that I hastened to have a look for (possibly) moths and grubs galore. However, an examination showed everything to be in splendid condition; not an egg had developed since I had last looked at the combs in August, and the grubs that were then present were all dead and as black as tar. Surely, the bisulphide on the other side of the line must be adulterated nearly as badly as those basswood hams we used to hear of. No, thank you, as long as 5 ounces of bisulphide of carbon will effectually fumigate 600 combs, I have no use for sulphur and its sickening fumes."

To this Editor Craig adds this comment:

"We think Mr. Greiner can not have used the drug properly, else he would have had better results. We must remember that the fumes of the bisulphide of carbon are heavier than the air, and therefore their tendency will be to descend or fall. The drug must, on that account, be placed above the combs, and in a broad, shallow vessel of some sort, giving as much surface as possible for rapid

evaporation. Then, again, the fumigating box should be as air-tight as possible to prevent the fumes escaping, although we have had very satisfactory results from simply piling the extracting supers with combs, one above another, seven or eight high, and placing a saucer with 3 or 4 ounces of the bisulphide inside a rim on the top, and covering all with a hive-cover. The stuff is cheap—is sold ordinarily at 10 cents a pound—so that there should not be much temptation to adulterate it."



Doctor Miller's Question Box

Send questions either to the office of the American Bee Journal, or to Dr. C. C. MILLER, Marengo, Ill.
 Dr. Miller does not answer Questions by mail.

Three-Frame Nucleus and Queen

1. If I buy a 3-frame nucleus with queen, can I have the queen's wing clipped by the one from whom I buy? If so, will she come through with the nucleus all right? Can I thus secure a queen that will be in breeding condition?
2. Will a 3-frame nucleus give me any surplus honey the first year?

ANSWERS.—1. Most assuredly. A clipped queen will stand the journey just as well as an unclipped one, and will do just as good work afterward. Some shippers prefer to clip before sending, one reason for it being that a beginner sometimes buys a queen and tries to introduce her where another queen is present. The new queen is killed, and when the young bees hatching out show the wrong color the purchaser thinks he has been swindled, whereas the shipper was not at all to blame. If the new queen is clipped he will know she was killed when he finds a queen with whole wings.

2. Maybe, and maybe not. If you get it tolerably early, and the season is good, and especially if there is a good fall yield, you ought to get some surplus honey.

Running Out-Aplaries and Managing Swarming

I want to run three bee-yards, but can't do it with all of them swarming all the time. All the increase I would want would be one swarm from each strong colony. I thought of seeing the bees about once in 10 days. If they swarmed I would take a new hive with one-half inch starters of brood foundation in the frames and set it on the stand of the old hive, taking out a frame with the queen from the old hive and putting it into the new one, and also shake part of the bees off in front of the new hive; then put the old hive in another place for a day or two, and give it a sealed queen-cell or a queen. What do you think of this plan? Will the bees do any good in that way? Will they store honey? If my plan is not a good one, please tell me what you would suggest for running an out bee-yard where one can not be there all the time.

MISSOURI.

ANSWER.—Yes, your plan will work, for it is practically the shake-swarm plan used by so many. You will find, however, that if you fill the frames half full of foundation you will have an undesirable amount of drone-comb. If you don't want to fill all the frames with foundation, instead of filling each frame half full, it will be better to fill half the frames full and put only shallow starters in the others. Give at first the frames with starters, for the bees are likely to build worker-comb at the start, and then when they have those frames filled, add the frames that are filled with foundation.

Full Sheets or Starters of Comb Foundation in Sections and Brood-Frames—Oilcloth or Super-Cover in Winter

1. What grade of foundation do you use for frames and for sections? I used a few frames the past season, and 6 sheets weigh one pound. Next season I expect to get 30 hives more, and want to use full sheets of foundation, and

would like to know if lighter sheets would do as well as the heavy grade.

2. Will bees winter as well in the cellar with oilcloth on as they would with a super-cover without oilcloth and no super?

3. If I put in each hive 4 or 5 frames with starters, the rest full sheets, and 3 or 4 days afterward take out the full sheets so the starters will be filled with worker-comb, where should the starter frames be placed, in the center or at one or both sides of the center, when the full sheets are returned? I like full sheets; that does away with a lot of tramps (drones), but it costs a good price for foundation, so if anything more in this line you can give would be thankfully received.

NEW YORK.

ANSWERS.—1. For sections, thin super. I haven't bought any brood foundation for some time, but have used heavy brood and medium brood. The weight of foundation for brood-frames depends chiefly upon the support given. If no wires or foundation splints are used, it should be very heavy. Well supported by wires or splints, there seems no reason why something quite light would not do; and the thinner the foundation the less it costs to fill a frame.

2. Probably yes, although in a cold cellar the cover without oilcloth might be better.

3. In the center if not wholly filled; if filled it doesn't matter.

Questions Concerning Winter Conditions

Are any of the following eight statements untrue? If so, which, and why? They concern winter conditions:

1. In a painted hive in good repair there will be no large openings except the entrance, and the bees will always so completely propolize all cracks as to make the hive wind-proof, water-proof, and light-proof, except at entrance.

2. A telescope cover, which is merely a sheath of some sort, and not made air-tight around its bottom edges, can not be said to furnish a dead-air space around a hive, since the wind will blow up underneath somewhat, and heat from the walls of the hive, if these walls have any heat, will cause a current of changing air in the air-space, and if the walls have no heat the air-space would be useless. The only advantage of such covering will be to break the force of the wind against the upper part of the sides and over the top of the hive, and, by preventing rapidity of wind currents, will reduce the rate at which will be removed the heat of the top of the wooden walls and the top of the hive, if they have any heat.

3. As wax is a non-conductor, or poor conductor, of heat, a comb of bees conveys practically no heat along its edges, supports, or parts of contact of the comb or frame to the hive-walls. The hive-body, therefore, has no heat derived from the contact with the frames.

4. As the cluster in winter covers only half the frame-space, the walls of the hive are too far removed from the cluster to derive heat directly from the cluster of bees.

5. The air below the cluster and around the outside combs containing the cluster is practically identical with the temperature of the outdoor air.

6. The air above the cluster contains some heat radiated and rising from the cluster, and is lost by transmission to the cover or top.

Therefore—(a) Protecting the sides and bottom of the hive-body has no direct effect on the heat of the cluster.

(b) Protecting the top of the hive prevents the top losing the heat arising from the cluster.

(c) A telescope cover protecting more than the top, and the quarter-inch space above the frames is useless, and since it prevents quick action of the sun on the hive-walls in temporarily or slightly sunshiny days, thus interfering with the warming-up and drying-out process, such telescope cover is a damage, not an aid, to the bees.

7. The end to be sought is to keep the cluster as dark and quiet as possible until the heat of the outside air penetrates through the entrance and rouses the bees; also to keep the air in the hive as quiet as possible without stopping suitable ventilation. Could not this be best accomplished by a full-width summer entrance covered entire, except one-quarter of an inch at one side for egress, with fine-mesh screen to keep out mice, and, on warm days, robber-bees, said screen being backed by one thickness of burlap cloth, thus eliminating largely the effects of the wind and light, and rapid change without stopping slow ventilation?

Conclusion: Should not telescope covers and chaff hives be discarded for wintering, merely covering the top

of the hive and the first inch of the sides, and using porous cloth at the full-width entrance?

8. The foregoing is all based on the statement recently printed in italics, that "The air within the hive and surrounding the cluster is very little higher than that outside the hive." Has any experiment proved this statement, or is it an assumed fact?

INDIANA.

ANSWER.—You are getting things down pretty fine, and I don't know enough to be any too positive about some of them, but I can at least say how they look to me.

Statement 2 may or may not be true, according to the different interpretations put upon it by different persons. Some will read it through, and then add a *therefore* something like this (and I rather understand that to be your *therefore*, too): Therefore, any part of a telescope cover more than an inch below the top has no practical effect in keeping a hive warm. While it is true that so long as the telescope cover is open below there is no dead-air space, yet there is an approximation, and such a cover is quite different from leaving a hive entirely uncovered, just as stock will discover the shelter of a clump of trees or bushes in a cold wind.

Statement 5. I think that if you will put a thermometer in a hive, you will find that the air in the hive is quite a bit warmer than that outside during zero weather.

Statement 6 will hardly hold. It says practically that no heat is lost from the cluster except that which is lost by radiation directly upward. Doesn't heat always radiate equally in all directions? Neither is radiation the only means by which the heat of the cluster is lost. The likelihood is that very little heat is lost by radiation compared with that lost by convection, and convection affects the

lower part of the cluster at least as much as it does the upper part.

You say that the outside wall prevents the heat of the sun from getting in during warm days. Aren't you just a bit in danger of clashing with yourself there? For if the outside wall is a bar to the passage of heat inward on a warm day, is it not equally a bar to the passage of heat outward on a cold day?

Is there not just a little bit of clash between statements 7 and 6? In 7 you want the cluster to remain quiet until the heat of the outside air penetrates "through the entrance," while in 6 you apparently want it to penetrate through the walls of the hive, for you say the telescope cover interferes with warming up.

Your scheme of closing the entrance with wire-cloth and burlap might work all right, only wouldn't there be danger that a quarter-inch entrance-hole would get clogged with dead bees?

Statement 8 is just a bit indefinite, the expression, "very little higher," being so elastic that one person might understand it to be many degrees more than another. Yes, the French scientist, Gaston Bonnier, and perhaps others, have told us just what difference there was between the temperature in and out a hive, but I can not give the figures. Of course they would vary according to conditions, and you can try it as well as any one else. At any rate, there is so much difference that it would hardly be safe to conclude that the walls of a hive are of no value in the way of protection.

I believe you are quite right that it is of more consequence to protect well above, but as to the rest—well, I don't know.

Some Good Clubbing Offers

A good many subscriptions to the American Bee Journal should be renewed at once. We wish to call special attention to the clubbing offers below, which we are sure will commend themselves. The American Bee Journal one year and your choice of one of the following:

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CONVENTION NOTICES.

Nebraska:—The annual meeting of the Nebraska State Bee-Keepers' Association will be held on Wednesday, Jan. 17, at 2 p. m., at the Experiment Station Building of the Nebraska State Farm, at Lincoln, Neb. The meeting will be of interest to all bee-keepers. E. Kretschmer, of Iowa, will read a paper on "Bees and Fruit;" H. F. Smith, Assistant in Department of Entomology of the University of Nebraska, will read a paper entitled, "The Relation of Robber-flies and the Honey-Bee."

A general discussion will give all present an opportunity to discuss subjects of interest. Lincoln, Neb. LILLIAN E. TRESTER, Sec.

Colorado:—The Colorado State Bee-Keepers' annual convention will be held in the Chamber of Commerce Building, Denver, Jan. 30, 31, 1906. This will be during "Farmers' Week," when many farmers' organizations will be in the city holding conventions. We are assured of low railroad fares from all points of the State. We are planning for our usual good convention. R. C. ATKIN, Sec. Loveland, Colo.

Reports and Experiences

Very Poor Honey-Year

This has been a very poor year with us—in fact, the poorest since we began in the bee-business, and that was in the early '90's. No nectar in flowers and millers make a bad combination for a bee-keeper.

Dexter, Mich.

K. H. WHEELER.

Good Prospects in Cuba

Up to this date the honey crop in Cuba has been very good. Aguinaldo is a wonderful bloomer. Good colonies have already given 150 pounds of extracted honey.

Palacios, Cuba, Dec. 10. M. C. ENGLE.

More Black than Italian Drones

I notice considerable discussion lately about pure Italian bees sporting, or going back to blacks. One writer thinks that blacks are swifter on the wing; but even that will not account for it all. In my opinion they have not found the right solution yet. One of my neighbors, with 6 or 8 colonies, rears more drones than I do with 50 colonies, and they are just the ones that always have black bees.

A modern bee-keeper reduces the drone-comb to the minimum, but the farmer bee-keepers have a host of drones. The old queen is hived in an empty box or an empty modern hive, and if he helps any it is the second swarm. I have rendered a good many box-hives of combs for small bee-keepers this fall, and it is surprising the amount of drone-comb I found. A slipshod bee-keeper rears more drones in a few colonies than a good bee-keeper in a hundred. IRVING LONG. Marceline, Mo.

Dead Wrong About the Sparrow

MR. EDITOR:—I have been reading about the bees doing so much damage to grapes, in the American Bee Journal. Well, any red-headed man can see the absurdity of such a statement. That sparrows will gladly sip the

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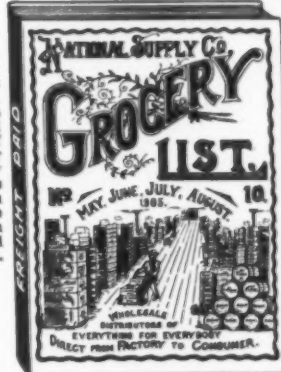
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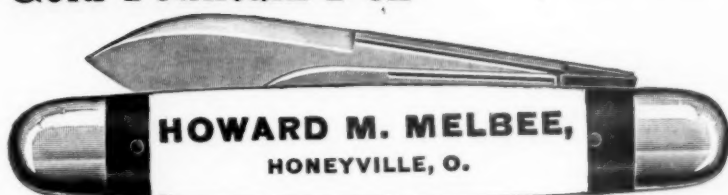
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Drone

nectar from the broken berries is no doubt correct, and no wonder, but that is not the question that sends such a glow under my linen collar.

In deprecating the statement regarding the bees immediately follows a cold-blooded accusation against the "sparrow pest." Now, that is not the square deal I am accustomed to find in the usually considerate American Bee Journal. I feel this is an oversight—don't believe the Editor was at home when the poor birds were called hard names. The little sparrow has a hard row to hoe, at best, without bearing the stings of malice heaped upon it by inconsiderate persons who constantly instigate their persecution and death. Let us all carefully investigate and give the little fellows a fair show. What have they done? Great good and but little harm, the latter only incidentally, as we all do. If the millions—nay, billions of insects which the sparrows destroy every year were allowed to mature and bear their kind, life would long since have been a hideous nightmare, and vegetation a thing of the past.

It is within my easy recollection when Eastern parks were made desolate by myriads of what are known as "inch worms"—the little caterpillar that fed so ravenously upon the leaves of the elms in particular, and all other trees in general. How they spun from ground to tree-tops in thousands, having a special predilection for resting on the fair, bare shoulders of the ladies reposing under the shade of some monarch trees. Soon the dames arose and left in disgust.

Since the considerable introduction of Mr. and Mrs. Sparrow, you can sit in the parks all day with never a vision of the crawling things.

Fate has ordained it that every long-eared amateur must dwell upon the vicious nature of everything living, of which they know little or nothing. What they do not know is, of course, not worth considering. Could they but think and observe they might have divined the real purpose sparrows have of pecking into fruit—not wantonly to destroy it, but to find the luscious little worm that is snugly nestling in that grape, or that peach, or that curculio-punctured plum. Just as the "yaller hammer" thrusts his strong bill to the core of a red-cheeked apple for the codling grub in its seed-bed, or as the robin steals off with the early-matured cherry, with its fat little wiggler waiting to develop and take its flight, so does Mrs. Sparrow persistently investigate for opportunities to find Palmer House fare for her ravenous fledglings. How can the birds help doing some harm in their effort to do great good?

By all means give the boys a chance to study bird-life around them, that they may learn of the beauty and usefulness of the birds they try to destroy because of the ignorant superstitions acquired from those whose opportunity for truthful study has been denied them.

EM DEE.

Chicago, Ill.



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Honey and Beeswax

CHICAGO, Dec. 6.—The trade in best grades of white comb honey has been fair, yet retailers taking only small quantities at a time. This honey brings 14¢@15¢; other grades are difficult to place at from 1¢@3¢ per pound less. Extracted selling at 7¢@7½¢ per pound for white; amber 6¼¢@7¢; dark 5¼¢@6¢. Beeswax, when clean and of good color, 30¢. R. A. BURNETT & CO.

CINCINNATI, Nov. 24.—The demand for comb honey is relaxing to some extent, owing to the majority of the trade being well supplied. All fears of a comb honey famine have been allayed. We quote fancy white comb honey at 14¢@16¢. Extracted honey is in fair demand. Quote amber at 5¼¢@6¼¢, according to the package and quality. Fancy white and white clover extracted at 6¼¢@8¼¢. We are paying 2½¢ per pound delivered here for choice yellow beeswax. (We wish to call the attention of the producer to the above honey quotations, who mistakably expects to receive these prices for his product. The above are our selling prices.)

THE FRED W. MUTH CO.

TOLEDO, Oct. 17.—The honey market remains firm, with good demand, and prices the same as last quotations. Fancy white comb brings 15¢; No. 1, 14¢; fancy amber, 13¢; buckwheat, 13¢. Extracted, white clover, in barrels, 6¼¢@6½¢; amber, in barrels, 5¢@5½¢; in cans, 1¢ to 1½¢ higher. Beeswax in good demand, 26¢ cash, 28¢ trade. GRIGGS BROS.

ALBANY, N.Y., Nov. 8.—Our honey market is in healthy condition; demand good; receipts about equal to demand. Prices are not quite as high as last year, but the tendency has been to work off the honey before cold weather, and we think the crop has come forward more than usual this season, which is a good sign. We quote: Fancy white clover, 15¢; A No. 1, 14¢; No. 1, 13¢; buckwheat, fancy, 13¢; A No. 1, 12¢; No. 1, 11¢@12¢; straight buckwheat is wanted in this market. Extracted, quiet; white, 7¼¢; mixed, 6¼¢; buckwheat, 6¼¢. Beeswax scarce at 30¢. H. R. WRIGHT.

PHILADELPHIA, Nov. 20.—The demand has been very good for honey in the past 10 days. In fact, it takes a little sharp, cool weather to get people started, and when they do start, the

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demand continues for some months. We would say, now is the height of the honey season. We quote, in a jobbing way: Fancy comb, 15¢@17¢; No. 1, 13¢@15¢; amber, 12¢@13¢. Extracted, fancy white, 7¢@8¢; amber, 6¼¢. Beeswax firm at 28¢. We are producers of honey and do not handle on commission. WM. A. SELSER.

INDIANAPOLIS, Dec. 15.—There is a tendency for higher prices on best grades of honey. The demand for strictly fancy white comb honey exceeds the supply. Demand for lower grades of comb honey not good. Numerous shipments of honey arriving, but no one producer seems to have very great quantities to offer. I quote fancy white at 15¢@16¢; No. 1 in poor demand at 12¢, and amber dull at 10¢. Best grade extracted brings 8¢@9¢ in 60-lb. cans; amber slow at 6¢. Beeswax, 30¢@33¢. WALTER S. POWDER.

DENVER, Nov. 11.—No. 1 white comb honey, per case of 24 sections, \$3.35; No. 1 light amber, \$3.00; No. 2, \$2.50@3.00. Extracted honey, 6¼¢@7 cts. per pound. Supply is light and we could make quick sales of consignments at above figures. We pay 24¢ for clean, yellow beeswax delivered here.

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CINCINNATI, Dec. 18.—The nice weather holds back the demand for comb honey. Crops seem to be exceedingly short and producers in the West keep the prices high. We quote as follows: Fancy water-white and No. 1 white clover, 14¢@16¢; No. 2, 12¢@14¢. Extracted seems to be more plentiful, and we quote same in barrels, light amber, 5¼¢@5½¢; in cans, ¼¢ more; white clover, 7¢@8¢. Beeswax, 28¢@30¢.

C. H. W. WEBER.

NEW YORK, Dec. 6.—The demand for comb honey continues to be fair for all grades. Prices practically remain the same. We quote fancy white at 14¢@15¢; No. 1 at 13¢; No. 2 at 12¢, and buckwheat at 10¢ per pound. Extracted honey is in good demand, especially California honey with large supplies. We quote white at 6¼¢@7¢; light amber at 6¢; buckwheat, extracted, at 5¼¢@6¢ per pound; Southern at 50¢@60¢ per gallon. Beeswax firm and steady at 29¢@30¢ per pound. HILDRETH & SEGELKEN.

SAN FRANCISCO, Dec. 6.—White comb, 1-lb. sections, 9¢@10 cents; amber, 7¢@8¢. Extracted, waterwhite, 4¼¢@5¢; white, 4¼¢@4½¢; light amber, 4¢@4½¢; amber, 3¼¢@4¢; dark amber, 3¢@3½¢. Beeswax, good to choice, light, 26¢@27¢; dark, 24¢@25¢.

Honey is being offered more freely at appearing quotations than for some weeks past, and it now appears that growers are awakening to the fact that they can not force prices any higher by holding their honey. At these figures there should be a good profit to the bee-men and a small margin to jobbers. Hawaiian extracted amber is selling at 2½¢ cents, at primary points, but it is not likely that California apiarists have anything to fear from competition, as their crop is all marketed in England.

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